User Guide

For the Collection and Submission of Water Samples

Ministry of Environment and Climate Change
Chemistry Laboratory
Dorset, Ontario

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November 2015

Version 2015 2.0

www.desc.ca

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Introduction

This guide is intended for use mainly by scientists, supervisors, and field sampling crews submitting samples to the Dorset Chemistry laboratory. All groups intending to send samples to the Dorset Chemistry lab should obtain a test load, (the number of samples and type of sample allowed) and ***approval*** from the lab supervisor (jim.rusak@ontario.ca) before field sampling begins for the year. Sampling staff are encouraged to visit, email or phone the Dorset submission entry clerk, to be provided with a customized submission form. The lab is currently configured to process primarily surface water samples from central Ontario lakes. Please enquire if you plan on submitting other types of samples. A list of all available chemical analyses that can be performed by the Water Chemistry Laboratory can be found in Section 11.

The first step in ensuring quality results is the process of taking the sample correctly. Make sure that the proper technique is understood before you sample! For a complete discussion of sampling methodologies used in Dorset Environmental Science Centre (DESC) long-term monitoring programs please consult the following manuals. ***Lake Sample Collection Methods-Final edits.doc*** for lake sampling techniques (G:\Programs\Inland Lakes\Lake Documents\ - contact: Ron Ingram) or ***Hydrometeorology Sampling Methods.doc*** for stream and precipitation sampling (G:\Programs\Inland Lakes\Lake Documents\ - contact: Chris McConnell). For a general overview, please refer to the section "Basic Instructions for Obtaining Water Samples for Chemical Analyses". Chemistry results are archived in our Dorset Oracle Database (Dorset Data Store). The evolution of the sample submission form has allowed it to be the best method to load sample information to our Oracle database. It cannot be stressed enough how important it is to create digitally correct submission forms. These forms are to be populated in Excel. Mobile handheld devices such as netbooks or tablet computers can also be used to fill in the forms. The form used, will depend on whether or not you are sampling a lake, stream or collecting precipitation samples. There is also a special form for samples originating in a Laboratory. E.g., FLAMES lab or Waterloo lab. Please refer to the section "Detailed Instructions for Completing the Sample Submission and Field Data Forms" for specific instructions on completing forms for the various types of sampling.

The latest version of this guide can be found on the Dorset LAN at:
G:\General\Sample submission

Or at the website: http://desc.ca/water_chemistry

1) Basic Instructions for Obtaining Water Samples for Chemical Analyses

The intent of this section is to highlight the practical aspects of obtaining a water sample that will yield the best water chemistry results, irrespective of whether the sample comes from a lake, stream, precipitation collector, or an underground aquifer. As such, users should also seek instruction from the lead scientist on the project being sampled for details on the sampling procedure for their particular system of interest.

a) **Ensure you can store samples properly once you collect them** – A cooler with freezer packs and a test tube rack is the preferred method of transport as the samples should be kept cool. If sampling in more rugged terrain, keep the glass sample containers in their foam wraps and make sure samples remain upright with the help of suitable packing material. Ice can be used if placed on the cooler bottom and samples are isolated from it, (in a Zip-lock bag) and contamination can occur if sample containers come into direct contact with melt water.

b) **Use non-powdered vinyl gloves** – To avoid washing any of your personal chemistry into the sample bottle, samplers must obtain their sample with gloves on their hands. Please change gloves when you change waterbodies.

c) **Make sure you will have a valid StationID** - If you're sampling a new station that hasn't been sampled before make sure you collect latitude and longitude (NAD83-UTM Zone17N) with a GPS (or find out the lat/long of where you were once back in the lab with Google Earth or FlashEarth). If you're uncertain whether or not a stationID already exists for your location, please check with the DESC database manager (johnny.su@ontario.ca).
Label your bottles correctly. Non-reusable plastic bottles should be labeled directly on bottles with permanent marker. It's preferred to have the PET jar labeled top and side. Reusable bottles typically come pre-labeled and if additional labels are needed, please see the lab.

d) **Filter** - Most samples need to be filtered through an 80 µm mesh prior to collection in the sample container irrespective of whether they originate from lake, stream, precipitation or groundwater sampling. The only samples for which this is not the case are TIC/TN and pH/alkalinity (see appendix 12 for photos) – both these sample bottles are distinguished from the others by the presence of a septum that is part of the bottle closure. Because carbon is dissolved in water as CO_2, introducing oxygen to the sample via filtration is not advisable. pH is also affected by exchange of CO_2 when the water sample is not in equilibrium with the atmosphere.

e) **Rinse sample containers three times -** Including sample container caps. Additionally, the filter apparatus also needs to be rinsed three times prior to the acquisition of the first water from a particular sample. Rinse using water being sampled (filtered or unfiltered).

f) **No air in TIC/TN and pH/alkalinity samples** – For the reasons stated above, these samples should have no air bubbles in the container. Invert transparent sample containers to check if air bubbles were captured.

g) **Fill phosphorus tubes correctly** – Water height should be above the etched line, but no more than 1 cm above. Phosphorus adheres to container walls and is brought into solution during the digestion phase of analysis. Overfilling will result in an overestimation of the true phosphorus concentration but under-filling or filling directly to the etched line makes the analysis process difficult.

h) **Do not preserve water samples in the field** – This is particularly true for samples to be analyzed for metals – high grade nitric acid needs to be used for these samples and this grade is not readily available. There may be occasions where chlorophyll samples need to be fixed to avoid perishability limits, but please contact the lab if you think this might be a problem.

i) **Sample with care** – Do not disturb the water column (sample from the surface to the bottom) or stream substrate (discard rinse water downstream) unnecessarily when sampling. Ensure unfiltered samples are free from debris.

j) **Ensure samples are properly labeled** - The description on the bottle should match the description on the sample submission sheet.

k) **Submit samples properly to the Chemistry Laboratory** – Smile. Gifts of chocolate are always welcome. If after hours, please properly refrigerate samples until they can be submitted the following morning (see detailed instructions below).

2. Detailed Instructions for Completing the Sample Submission and Field Data Forms

Every sample submitted to the lab for analysis must be accompanied by a properly completed sample submission form containing the appropriate data describing that sample or it will not be processed. Obtain the MOST current form by emailing the request to Chemistry.Dorset@Ontario.ca. The process is described below with reference to a lake sample submission, but the fields that require completion are the same for all other types of samples. Examples of the other forms follow this initial illustration.
Please note some fields on the submission form are locked and cannot be changed.

a) Lake Samples

Below is an example of what a typical lake submission sheet looks like with the fields that need modification highlighted in light yellow. No new columns are to be added, or deleted, but more rows are acceptable. Cyan shaded sections are filled in by the lab.
"Mouseover" the red triangle for proper codes and explanations. Dropdown tabs show examples of data that could be used in that cell.
Project Submission forms (Excel 2010 format) will be emailed to you at the start of the sampling season or if access to the Dorset File Server is possible, can be found here:
G:\General\SampleSubmission\COMPLETED_FORMS

	A	B	C	D	E	F	G	H	I
1	Date Submitted:	Form Type:	Study Name:	Sampled by:	Submitted by:	Client ID	Program Code	SUBNUM:	
2	13-Jan-2014		A lake	Ron Ingram	Ron Ingram	43762	0170701		
3									
4									
5								Lab Use Only	
6					Sampler Contact Information:			No Entry Here	
7	)atabase Contact Name:	Johnny Su				email:	ron.ingram@ontario		
8	Address:	DESC, Bellwood Acres Rd, Dorset, P0A 1E0				phone:	705-766-2499		
9	Phone:	705-766-1291							
10	LAB USE ONLY		MANDATORY DATA (if a duplicate "tp3036" is requested under "additional product(s)", "product group" must be blank)						
11	LAB SAMPLE NUMBER	SampleSet#	Cont. Submitted	STATION ID	DATE	TIME	Location	product	additional
12			(number)	(11-digit alphanumeric)	dd-mmm-yyyy	hh:mm	Description	group	product(s)
13	C??????-0025	1	5	03008557001	13-Jan-2014	13:00	Harp Epi	DRCLKA	met3474
14	C??????-0025	1	1	03008557001	13-Jan-2014	13:00	Harp Epi		tp3036
15	C??????-0025	2	5	03008557001	13-Jan-2014	13:00	Harp Meta	DRCLKA	met3474
16	C??????-0025	2	1	03008557001	13-Jan-2014	13:00	Harp Meta		tp3036
17	C??????-0025	3	5	03008557001	13-Jan-2014	13:00	Harp Hypo	DRCLKA	met3474
18	C??????-0025	3	1	03008557001	13-Jan-2014	13:00	Harp Hypo		tp3036
19	C??????-0025	4	2	03008557001	13-Jan-2014	13:00	Hp 0.1		dopHacc3513
20	C??????-0025	5	2	03008557001	13-Jan-2014	13:00	Hp 1		dopHacc3513
21	C??????-0025	6	2	03008557001	13-Jan-2014	13:00	Hp 3		dopHacc3513
22	C??????-0025	7	2	03008557001	13-Jan-2014	13:00	Hp 5		dopHacc3513
23	C??????-0025	8	2	03008557001	13-Jan-2014	13:00	Hp 7		dopHacc3513
24	C??????-0025	9	2	03008557001	13-Jan-2014	13:00	Hp 9		dopHacc3513
25	C??????-0025	10	2	03008557001	13-Jan-2014	13:00	Hp 11		dopHacc3513
26	C??????-0025	11	2	03008557001	13-Jan-2014	13:00	Hp 13		dopHacc3513

The Field data part of the submission sheet will look like this:

Mandatory	Optional FIELD DATA PORTION - Fill in as much as possible (mouseover red triangle for proper codes and explanations)							
SPECIAL STUDY_ID	SAMPLE GEAR_TYPE	SAMPLE TYPE	WLAYER	SDEPTH	BGDEPTH	WDEPTH	SECCHI	SDESC Sample Description/Comments
47	2	12	2					
47	2	12	2					
47	2	12	3					
47	2	12	3					
47	2	12	4					
47	2	12	4					
47	2	10						
47	2	10						
47	2	10						
47	2	10						
47	2	10						
47	2	10						
47	2	10						
47	2	10						
47	2	10						
47	2	10						
47	2	10						
47	2	10						

The highlighted fields in light yellow generally need to be completed; SDESC is optional, but is used as needed to record any irregularities with the sampling procedure overall or unique conditions encountered in the field that might impact the chemistry results.

Form Completion Instructions:

Ensure that every sample container is labelled with either a Field Sample ID or a Sample location description (Text that is in the LDESC field - e.g., CN-W). The PET bottle should have an identifier on the side of the bottle and on the cap.

Accurately fill out the following fields at the top of the form:
a. **Date Submitted** = submission date in (dd-mmm-yyyy) format
b. **Sampled by** and **Submitted by** = sampler name
c. **Study Name** = the name of the Study that this submission is associated with
d. **Email** and **phone** = Best contact information

Accurately fill out the following cells in the form table:
b. **Sample Set#** = numeric (Beginning at 1) - VERY IMPORTANT - the sample set identifier is intended to provide a way of retrieving replicate samples specifically total phosphorous, (from the Dorset Oracle Database) that have been taken at the same time and location. If samples are identical but are taken for different parameters then they may require a different sample set number (e.g., a lake composite sample for Total Phosphorous is one sample set number and a lake composite sample for chlorophyll will be another sample set number), but generally when the samples are taken from the same water sample or pumped from the same depth the Sample Set# is not incremented.
c. **CONT. SUBMITTED** = numeric – number of containers submitted for that sample.
d. **STATION** = Alphanumeric Identifier - See database manager (currently Johnny Su: johnny.su@ontario.ca) for the creation of unique station ID codes for your project.
e. **DATE** and **TIME** = time of sampling - Date format as above, time in 24 hour clock.
f. **LDESC** = Location Description. A short or abbreviated description of where the sample originated. E.g., PC-Epi or PC-W. Please ensure that this identifier is entered consistently in the same manner. (i.e., if PC-W is

entered with no spaces and a dash, DO NOT insert spaces or remove the dash. This helps when querying data in Oracle.).
g. **PRODUCT Group** and **PRODUCT** = Alphanumeric Identifier - Unique Code to identify the tests that you require. See Section 11 below.
h. **SPECIAL STUDY_ID** = Numeric Identifier - Mandatory field. See database manager or sample submission clerk for a new SSID if you do not already have one. Please email a thorough written description of your project to the database manager (johnny.su@ontario.ca) when obtaining a new Special Study ID.
i. **Field Data**: Columns U – AB. Fill in whenever possible - projects are strongly encouraged to submit these data along with their chemistry data. See section 5 below for explanations.

The Excel file is to be saved with a descriptive name followed with the date in MMDDYY format. E.g., Crosson_01_19_10.xls. The file should also be in the Office 2010 format (xlsx).

Sample Submission to Chemistry Laboratory

Samples are to be left on the counter in the sample reception area. (LEM Building), during the day and refrigerated if after 4:00 pm. Samples will normally be accepted only Monday to Thursday. However, if samples could not be submitted in time on Thursday, or are collected early Friday morning, they can be accepted until noon on Friday. If leaving samples in the refrigerator after hours, be sure to submit your completed submission form *before* going to the field the next day.

Samples should be placed in order on the counter as they appear on the submission sheet, from left to right.

If there were any bottles that did not get filled or the bottle was misplaced in the field, then place a note with the submission on the counter, or in the cooler. The lab will decide to pour the missing bottles for analysis. Similarly if bottles are missing from your normal submission this should be noted on the submission sheet as well with a note or comment.
Completed submission forms should be available for the sample submission clerk to review on the Dorset file server in ***G:\General\SampleSubmission\COMPLETED_FORMS/ "Your Project"/current submissions,*** just before the samples arrive at the lab. The clerk, through LIMS, will assign a submission number ("C" number), catalogue the samples, and queue the analysis.

For those groups who are submitting samples in coolers shipped by courier please send your completed submission forms to the Chemistry Lab by email – Chemistry.Dorset@Ontario.ca.

b) Stream Samples

Please refer to the lake directions above for submitting stream samples. The procedures are the same for the sample attributes portion of the form below, but differ in the field data submitted.

	A	B	C	D	E	F	G	H	I
1	Date Submitted:	Form Type:	Study Name:	Sampled by:	Submitted by:	Client ID	Program Code	SUBNUM:	
2	23-Apr-2014	STREAMS	A Streams	Tim Field/Laurissa Christie	Tim Field	43762	0170702	C210579	
3									
4									
5									
6					Sampler Contact Information:				
7	Database Contact Name:	Johnny Su				email:	timfield01@gmail.com		
8	Address:	DESC, Bellwood Acres Rd, Dorset, P0A 1E0				phone:	705-766-2217		
9	Phone:	705-766-1291							
10	LAB USE ONLY		MANDATORY DATA (if a duplicate "tp3036" is requested under "additional product(s)", "product group" must be blank)						
11	LAB SAMPLE NUMBER	SampleSet#	Cont. Submitted	STATION ID	DATE	TIME	Location	product	additional
12			(number)	(11 digit alpha-numeric No.)	dd-mmm-yyyy	hh:mm	Description	group	product(s)
13	C210579-0001	1	5	03007752802	23-Apr-2014	9:33	RC0L	DRCSTRMB	met3474
14	C210579-0002	1	1	03007752802	23-Apr-2014	9:33	RC0L		tp3036
15	C210579-0003	2	5	91QCDHM0102	23-Apr-2014	9:33	RC0L-QC-FB	DRCSTRMB	met3474
16	C210579-0004	2	1	91QCDHM0102	23-Apr-2014	9:33	RC0L-QC-FB		tp3036
17	C210579-0005	3	5	03007752102	23-Apr-2014	8:41	RC1	DRCSTRMB	met3474
18	C210579-0006	3	1	03007752102	23-Apr-2014	8:41	RC1		tp3036
19	C210579-0007	4	5	03007752202	23-Apr-2014	8:56	RC2	DRCSTRMB	met3474
20	C210579-0008	4	1	03007752202	23-Apr-2014	8:56	RC2		tp3036
21	C210579-0009	5	5	03007752202	23-Apr-2014	8:56	RC2-QC-DUP	DRCSTRMB	met3474
22	C210579-0010	5	1	03007752202	23-Apr-2014	8:56	RC2-QC-DUP		tp3036
23	C210579-0011	6	5	03007752302	23-Apr-2014	10:21	RC3	DRCSTRMB	met3474
24	C210579-0012	6	1	03007752302	23-Apr-2014	10:21	RC3		tp3036
25	C210579-0013	7	5	03007752402	23-Apr-2014	10:10	RC4	DRCSTRMB	met3474
26	C210579-0014	7	1	03007752402	23-Apr-2014	10:10	RC4		tp3036

Lab Use Only
No Entry Here

Mandatory	Optional FIELD DATA PORTION - Fill in as much as possible (mouseover red triangle for proper codes and explanations)						
SPECIAL STUDY_ID	SAMPLE GEAR_TYPE	SAMPLE TYPE	Stream Temp	Stream Cond (µS/cm)	Stream DO (mg/L)	Stream pH	SDESC Sample Description/Comments
46	1	11	2.80	16	12.54	5.58	Sunny, clear, high 4°C, some sediment & organic debris in filter
46	1	11	2.80	16	12.54	5.58	Sunny, clear, high 4°C, some sediment & organic debris in filter
91	1	11					Sunny, clear, high 4°C,
91	1	11					Sunny, clear, high 4°C,
46	1	11	2.74	14	12.72	5.84	Sunny, clear, high 4°C, lots of sediment in filter. Lots of gravel in weir
46	1	11	2.74	14	12.72	5.84	Sunny, clear, high 4°C, lots of sediment in filter. Lots of gravel in weir
46	1	11	0.45	21	11.25	4.21	Sunny, clear, high 4°C, lots of sediment & little organic debris in filter
46	1	11	0.45	21	11.25	4.21	Sunny, clear, high 4°C, lots of sediment & little organic debris in filter
46	1	11	0.45	21	11.25	4.21	Sunny, clear, high 4°C, lots of sediment & little organic debris in filter
46	1	11	0.45	21	11.25	4.21	Sunny, clear, high 4°C, lots of sediment & little organic debris in filter

c) Precipitation Samples

Please refer to the lake directions above for submitting precip samples. The procedures are the same for the sample attributes portion of the form, but differ in the field data submitted.

	A	B	C	D	E	F	G	H	I
1	Date Submitted:	Form Type:	Study Name:	Sampled by:	Submitted by:	Client ID	Program Code	SUBNUM:	
2	24-Apr-2014	Precipitation	Dorset Precip	Tim Field/Laurissa Christie	Tim Field/Lauri	43762	0170703	C210667	
3									
4								Lab Use Only	
5								No Entry Here	
6					Sampler Contact Information:				
7	Database Contact Name:	Johnny Su				email:	timfield01@gmail.cor		
8	Address:	DESC, Bellwood Acres Rd, Dorset, P0A 1E0				phone:	705-766-2217		
9	Phone:	705-766-1291							

10	LAB USE ONLY		MANDATORY DATA (if a duplicate "tp3036" is requested under "additional product(s)", "product group" must be blank)						
11	LAB SAMPLE NUMBER	SampleSet#	Cont. Submitted	STATION ID	DATE	TIME	Location	product	additional
12			(number)	(11 digit alpha-numeric No.)	dd-mmm-yyyy	hh:mm	Description	group	product(s)
13	C210667-0001	1	5	03008553823	16-Apr-2014	12:33	PT3P	DRCPRECIP	met3474
14	C210667-0002	1	1	03008553823	16-Apr-2014	12:33	PT3P		tp3036
15	C210667-0003	2	5	03008502823	22-Apr-2014	14:00	SE1P	DRCPRECIP	met3474
16	C210667-0004	2	1	03008502823	22-Apr-2014	14:00	SE1P		tp3036
17	C210667-0005	3	5	03008550623	22-Apr-2014	13:55	HYP2	DRCPRECIP	met3474
18	C210667-0006	3	1	03008550623	22-Apr-2014	13:55	HYP2		tp3036
19	C210667-0007	4	5	03008553623	16-Apr-2014	12:24	PT1P	DRCPRECIP	met3474
20	C210667-0008	4	1	03008553623	16-Apr-2014	12:27	PT1P		tp3036
21	C210667-0009	5	5	03008553623	22-Apr-2014	7:34	PT1P	DRCPRECIP	met3474
22	C210667-0010	5	1	03008553623	22-Apr-2014	7:34	PT1P		tp3036
23	C210667-0011	6	5	03008557123	22-Apr-2014	11:00	HPP2	DRCPRECIP	met3474
24	C210667-0012	6	1	03008557123	22-Apr-2014	11:00	HPP2		tp3036
25	C210667-0013	7	5	03008553823	22-Apr-2014	07:41	PT3P	DRCPRECIP	met3474
26	C210667-0014	7	1	03008553823	22-Apr-2014	07:41	PT3P		tp3036
27	C210667-0015	8	5	17002154123	24-Apr-2014	10:06	PCP2	DRCPRECIP	met3474
28	C210667-0016	8	1	17002154123	24-Apr-2014	10:06	PCP2		tp3036

Mandatory	Optional FIELD DATA PORTION - Fill in as much as possible (mouseover red triangle for proper codes and explanations)				
SPECIAL	SAMPLE	SAMPLE	Initial	Initial	SDESC
STUDY_ID	GEAR_TYPE	TYPE	Date	Time	Sample Description/Comments
49	61	15	14-Apr-2014	8:46	bit of organic debris in filter
49	61	15	14-Apr-2014	8:46	bit of organic debris in filter
49	62	10	14-Apr-2014	11:00	some organic debris in filter
49	62	10	14-Apr-2014	11:00	some organic debris in filter
49	62	10	15-Apr-2014	7:45	lots of organic matter and debris in filter
49	62	10	15-Apr-2014	7:45	lots of organic matter and debris in filter
49	62	10	14-Apr-2014	8:40	some organic matter and debris in filter
49	62	10	14-Apr-2014	8:40	some organic matter and debris in filter
49	62	10	16-Apr-2014	12:27	some organic matter and debris in filter
49	62	10	16-Apr-2014	12:27	some organic matter and debris in filter
49	62	10	14-Apr-2014	15:16	lots of organic matter and debris in filter
49	62	10	14-Apr-2004	15:16	lots of organic matter and debris in filter
49	61	15	16-Apr-2014	12:33	tiny amount of debris in filter
49	61	15	16-Apr-2014	12:33	tiny amount of debris in filter
49	62	10	15-Apr-2014	12:00	lots of organic matter and debris in filter
49	62	10	15-Apr-2014	12:00	lots of organic matter and debris in filter
91			24-Apr-2014	15:00	

d) Laboratory Samples

Please refer to the lake directions above for submitting precip samples. The procedures are the same for the sample attributes portion of the form, but differ in the field data submitted

3. Field Data - Explanations and Codes

SPECIAL
STUDY_ID NUMERIC (integer) - Project ID assigned by Database Manager

SAMPLE TYPE NUMERIC (integer) - Sample Type / Collection Method

	Method	***Origin of Water***
10	profile	lakes
11	grab sample (single depth)	lakes, streams
12	depth composite	lakes
13	time proportional composite	streams
14	flow proportional composite	streams
61	wet only collector	precip
62	bulk collector	precip
63	on ground snow	precip
71	groundwater sample	groundwater

SDESC CHARACTER - sample description.
Information about the sample that may help people reviewing the data interpret the results (e.g., pollen in sample). Indicate in this column if a sample has been already fixed prior to arrival at the DESC laboratory.
Maximum 256 characters to be entered, including spaces. All on one line.

SDEPTH NUMERIC (integer) - sample depth (in m) or top of composite for depth composite (SAMPLE TYPE = 12) samples

BGDEPTH Bottom depth (in m) of composite samples (SAMPLE TYPE = 12)

WDEPTH NUMERIC (integer or decimal) – depth (in m) of water at sample location

WLAYER NUMERIC (integer) – identifier for Lake Layer sampled

1	whole lake composite (spring and fall turnover)
2	epilimnion
3	metalimnion
4	hypolimnion
5	euphotic zone (surface to 2 x Secchi)
8	grab (Kemmerer etc. use with type = 11)
9	general layer (0-5 m composite etc.)

TEMP NUMERIC (integer or decimal) - water temperature in degrees Celsius.

SAMPLE_GEAR _TYPE	NUMERIC (integer or decimal) – Gear Identifier		
	1	hand sample - bottle filled by hand	(all media)
	2	peristaltic pump	(lake/groundwater)
	3	Van Dorn or Kemmerer Bottle	(lake)
	4	tube composite	(lake)
	5	composite bottle	(lake)
	6	Sangamo collector	(precip)
	7	Aerochemmetric collector	(precip)
	8	MIC collector	(precip)
	9	bulk collector (summer funnel)	(precip)
	10	bulk collector (winter funnel)	(precip)
	11	hand held manual pump	(groundwater)
	13	lysimeter (zero tension)	(groundwater)
	14	auto sampler	(stream)
SECCHI	Secchi depth in meters- must be present when WLAYER = 5		

4. Submission Check List Summary

a. Setting up Sample Submissions for the Sampling Season

Do you have an allocated test load approved by the Lab Supervisor? Any exceedances must be approved.

Do you have a Ministry of Environment and Climate Change contact person?

Have you provided sample reception your cell phone number or email address so that we may contact you in case there is a problem?

Make arrangements with the database manager (johnny.su@ontario.ca) to send you the final results. What file format will the results be in? How quickly do you need your results?

b. Considerations Prior to Field Sampling

Do you have all the bottles for sampling the parameters that are of required for your study?

How will you deliver the samples to the lab? During work hours or after hours?

Will your samples arrive at the lab within the described perishability limits?

Perhaps provide an email giving the lab notice of when coolers may arrive by courier.

Use of freezer packs, rather than ice, is recommended to keep samples cool to avoid sample contamination. If ice has to be used, make sure samples are isolated from meltwater.

Are your containers leak-free? If a total phosphorous tube leaks, it, and its companion should be re-poured in new tubes. Total Phosphorous tubes should be transported upright in the cooler in a rack or wrapped in foam protectors. The protectors are foam pipe wrap, cut the same length as the tube. Ask the lab if you need any or purchase your own.

The only samples to be preserved are 1) Metals (0.25ml conc. Trace metal grade HNO_3 / 80ml sample) and, 2) Chlorophyll (0.5 ml, $MgCO_3$ / 500ml sample). This is normally done by the lab. However, this can be done in the field if the sample is taken at a distant source.

Have you contacted the lab to find out what they require from you?

c. Submission Spreadsheet Check List Prior to Submitting to Lab

Is the submission submitted date correct?

Is the sample date correct? If the date is not correct, the sample will be analyzed and will include a remark code if the perishability limit has been exceeded.

Are all samples listed on the submission form? Count the containers and then count the number listed. Correct any discrepancies. Delete rows that are not used.

Is the sample time correct and in 24 hour format?

Remember to report your Field Data if at all possible.

Does the description on the bottle match the description on the sheet (note the Field ID or LDESC field)?

Are any of your samples preserved? Have they been identified (either a note on the bottle or a note on the submission form) as being preserved?

Ask if you're not sure! The Chemistry Lab phone number is 705-766-0632 or 705-766-0395.

5. Parameter perishability limits

Many parameters are not stable over extended periods of time, (even stored at 5 ±4 °C) and the methods for analyzing those parameters specify limits known as Holding Times, (see table below) beyond which samples must be discarded or flagged. Holding Time is defined as the time between the collection of the sample and the start of analysis. It is the *responsibility of the sampler* to ensure that the sample arrives at the lab within an appropriate period of time. For parameters with short perishability limits (5 days) the sample should arrive within 24 and not more than 48 hours after time of sampling. The sampler also needs to take into account weekends (especially long weekends). If shipping by Purolator or Canpar, consider not shipping on Friday if the samples will sit in the courier's warm warehouse for the weekend. The lab needs to have perishable samples available for a 2-3 day period (not including weekends) during which it can schedule an analytical run. If a sample for pH, alkalinity, or TIC is taken on Wednesday but doesn't reach the lab until Friday, the earliest that it could be analyzed is Monday. The lab will attempt to analyze the samples within the perishable time limit; however, if a run of the required method is not scheduled for that day, its perishability limit would be exceeded.

Samples for chemistry products may be analyzed after the holding time and be qualified with the remark UAL (Unreliable: Sample Age Exceeds Normal Limit).
It is also important to consider the chemistry, and where the sample has been taken. In some cases the perishability limits can be exceeded without much change taking place within the sample. For example, TIC, pH/Alkalinity taken from deep soft water lakes are very sensitive to perishability limits, whereas a surface sample is less sensitive. Samples with high conductivity and high pH can sit for more than 5 but less than 10 days, with no change. If in doubt, please contact the lab. Leave a note on the submission form indicating samples that can exceed holding time if you are aware of the nature of the water sample.

Products that have Holding Times of 30 days or less

Parameter(s)	Holding Time (*days*)
pH	5
pH – Alkalinity	5
TIC/TN	5
Conductivity	7
Total Phosphorous	30
Ammonia + Nitrate	14
TKN	14
DOC	14
Cations-Ca,Mg,K,Na	14
Chlorophyll	2[1]

[1] Chlorophyll samples that cannot meet the perishability limit should be fixed in the field with 0.5 ml of 1% $MgCO_3$ / 500ml sample

6. Minimum Volumes required for analysis

Note: If volume is not an issue, then all containers are to be filled to the top. Total phosphorus tubes are never filled to the top.

Bottle Type	Parameter	Minimum sample volume
TP reusable tube *50 ml glass, boro-silicate with PP cap*	Tp3036	Must be filled to 1.0 cm above the "etched line".
PET – 500 ml *Polyethylene terephthalate with white cap*	Ammno3374	30 ml
	Docsi3422	30 ml
	Anion3147	30 ml
	Cat3249	30 ml
Chlorophyll *Amber wide mouth HDPE 500 or 1000ml*	Dchl3169	500 ml
Metals *80 ml clear PP specimen jar with blue cap*	Met3474	25 ml
Total Inorganic Carbon/Total Nitrogen *40 ml glass vial with septum*	Carb3028	Must be filled to top with septum in place. No visible air bubble.
pH/Alkalinity/Colour/Conductivity 125 ml PET with septum	Dophacc3513	Must be filled to top with septum in place. No visible air bubble.

7. Example List of Special Study ID Codes – February 2010

STUDY_ID	STUDY_DESCRIPTION	PERSONNEL
65	Crayfish Survey 2007	Brie Edwards, Keith Somers, Don Jackson
66	Mercury	Greg Mierle, Murray Richardson
67	Martha Celis FLAMES Lab	Martha Celis, Norm Yan
68	Dallas FLAMES Chemistry	Dallas, Norm Yan
69	2008 MNR Broad-scale Monitoring	Andrew Paterson
70	A. Cairns' MSC Ca Project	Allegra Cairns, Norm Yan
71	Great Lakes	John Thibeau
72	York University	Natalie Kim/Norm Yan
73	Trent University (Watershed P project)	Andrew Paterson/Huaxia Yao
74	McGill University Special Project	Erin Gertzen/Brian Leung
75	NOBM- Northern Ontario Benthic Monitoring (Sudbury) Sept. 2008	Jocelyne Heneberry/Chantal /Bill Keller
76	Lake of the Woods Tributary	Andrew Paterson/Ron Ingram
77	University of Guelph mobile bulk depositions	Jenny Winter/Bahram
79	Dorset Temporal Streams/Benthos	Chris Jones/Jim Rusak
80	Sudbury Temporal Streams/Benthos	Chris Jones/Chantal Sarrazin-Delay
81	Far North Sampling - New 2009	Chris Jones/Andrew Paterson

8. List of valid LIMS Program/Study codes (Dorset specific).

0170701	Dorset Lakes – Dr. Andrew Paterson, Ron Ingram
0170702	Dorset Streams- Dr. Huaxia Yao, Chris McConnell
0170703	Dorset Precipitation – Dr. Huaxia Yao, Chris McConnell
017070401	Spatial Reference lakes –CAISN Study
017070402	York Flames Lab Studies – Dr. Shelley Arnott
017070405	OBBN Reference sites – Chris Jones
0170705	Dorset Internal Laboratory testing – Chemistry Lab
0170201	Lake Simcoe (LSEMS) Study – Dr. Joelle Young
017020201	Lake Simcoe Tributary Study – Dr. Joelle Young
0170204	Lake Simcoe Precipitation Study – Dr. Joelle Young
010120701	Lake Partners – Anna DeSellas
010120710	Sudbury/Laurentian University - Jocelyne Heneberry

9. List of LIMS Products and Parent Products

Dorset Product code	Common Test Name	Oracle Name	Units
Dophacc3513	pH	PH	pH
	Gran Alkalinity	ALKTI	mg/L
	Total Alkalinity	ALKT	mg/L
	True Colour	COLTR	TCU
	Conductivity at 25 °C	COND25	ms/cm^2
Ammno3374	Ammonia(+Ammonium)*	NNHTUR	µg/L
	Nitrate + Nitrite	NNOTUR	µg/L
Dorcsi3422	Dissolved Organic Carbon	DOC	mg/L
	Silicates	SIO3UR	mg/L
Tp3036	Total Phosphorous	PPUT1, PPUT2	µg/L
Carb3028	Total Inorganic Carbon/Nitrogen	TIC, TN	mg/L
Anion3147	Chloride	CLIDUR	mg/L
	Sulphate	SSO4UR	mg/L
Cat3249	Calcium	CAUT	mg/L
	Magnesium	MGUT	mg/L
	Sodium	NAUT	mg/L
	Potassium	KKUT	mg/L
Dtkn3424	Total Kjeldahl Nitrogen(Calculated)	TKN	µg/L

*Ammonia is by far the largest fraction of the two components of NNHTUR in shield lakes
Note: TKN is a calculated parameter

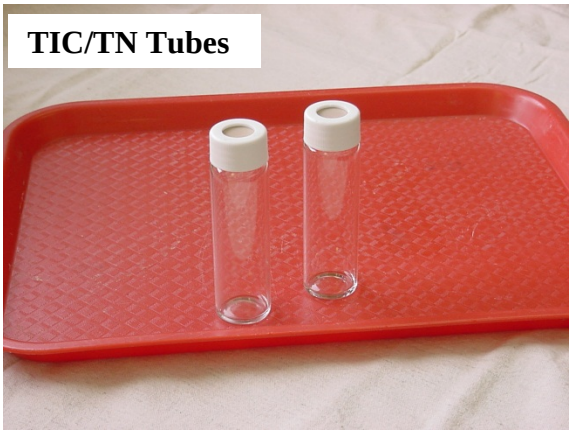
Rexdale Product Code	Common Name	Oracle Name	Units
Dchl3169	Chlorophyll – A Corrected	CHLRAC	mg/L
	Chlorophyll – A Total	CHLRAT	mg/L
Met3474	Aluminium	ALUT	µg/L
	Antimony		µg/L
	Arsenic		µg/L
	Barium	BAUT	µg/L
	Beryllium	BEUT	µg/L
	Boron		µg/L
	Calcium	CAUT	µg/L
	Cadmium	CDUT	µg/L
	Cobalt	COUT	µg/L
	Chromium	CRUT	µg/L
	Copper	CUUT	µg/L
	Iron	FEUT	µg/L
	Manganese	MNUT	µg/L
	Molybdenum	MOUT	µg/L
	Nickel	NIUT	µg/L
	Lead	PBUT	µg/L
	Selenium		µg/L
	Silver		µg/L
	Strontium	SRUT	µg/L
	Thallium		µg/L
	Titanium	TIUT	µg/L
	Uranium		µg/L

	Vanadium Zinc	VVUT ZNUT	µg/L µg/L

Parent Products	Matrix	Description	Products Included
DRCLKA	WS	Dorset A Lakes	Dophacc3513, Ammno3374, Dorcsi3422, Tp3036 Carb3028, Anion3147, Cat3249 Dtkn3424
DRCPRECIP	WP	Dorset Precipitation	Dophacc3513, Ammno3374 Dorcsi3422, Tp3036, Anion3147, Cat3249, Dtkn3424, Carb3028
DRCSIMPR1	WP	Simcoe Precipitation	Dophacc3513, Ammno3374 Tp3036, Anion3147, Cat3249, Dtkn3424, Carb3028
DRCSTRMB	WS	Dorset Streams	Dophacc3513, Ammno3374, Dorcsi3422, Tp3036 Carb3028, Anion3147, Cat3249 Dtkn3424
SUDLKALL	WS	Sudbury Lakes All	Dophacc3513 Ammno3374, Dorcsi3422, Tp3036 Carb3028, Anion3147, Cat3249 Dtkn3424
SUDLKGEN	WS	Sudbury Lakes General	Dophacc3513, Dorcsi3422, Tp3036 Carb3028, Anion3147, Cat3249
SUDLKNUT	WS	Sudbury Lake Nutrients	Ammno3374, Tp3036, Carb3028, Dtkn3424
DRCUSGS	WS	Chemistry Lab PT Testing	Dophacc3513, Ammno3374 Anion3147, Cat3249

10. Collection bottles

PET Bottles



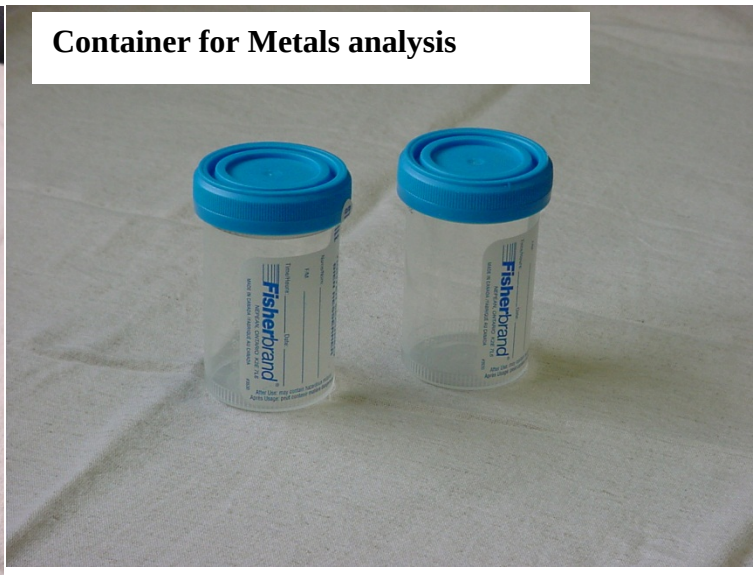
TIC/TN Tubes

Total Phosphorus tubes

pH/ALK,Colour,Conductivity – PET with Septum

Chlorophyll bottle

Container for Metals analysis



11. Glossary of Terms

Term	Explanation
LIMS	Laboratory Information Management System- Software used by the lab to enter information and results about the sample for archiving
Product	LIMS code for a type of analysis can have one or more tests.
Parent Product	A LIMS code for a group of products.

12. Contacts:

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13. Revision History:

15.1 - January 2010 – First draft
15.2 – May 2010 – Final version 1.10
15.3 – February 2011 revised 2010 manual
15.4 – April 2011 version 2011-1.2
2012-1.0 April 2012 – New LIMS product Dophacc3513 + various changes to sample submission section – largely updating screenshots
2014 – June 2014 – Version 2014-1.0 Reference to calculated TKN and Total Nitrogen. Excel 2010 files being used for submission forms.
2015 – November 2015 – Revisions incorporated

14. Notes: